

Attorney Docket No. RWB101US

10/067012

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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re PATENT of:

Applicant(s): Graham et al.

Patent No.: 6,929,465

Issued: August 16, 2005

Serial No. 10/067,012

Title: TIMER CIRCUIT FOR VALVE ACTIVATION IN OIL BURNER SYSTEM



LETTER

Decisions and Certificate of Correction Branch  
Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

**Certificate**  
**OCT 24 2005**  
**of Correction**

Dear Sir:


Enclosed is the Notification of Return of Papers including the originally mailed Request for Certificate of Correction of Patent, the revised form PTO-1050 with the corrected patent number, and copies of the pages from the patent and specification showing the correction for the above identified patent.

The commissioner is hereby authorized to charge any fees associated with this communication to Deposit Account No. 50-1733, Order No. RWBP101US.

Respectfully submitted,

ESCHWEILER & ASSOCIATES, LLC

**Certificate**  
**OCT 24 2005**  
**of Correction**

  
\_\_\_\_\_  
Thomas G. Eschweiler  
Reg. No. 36,981

National City Bank Building  
629 Euclid Avenue, Suite 1210  
Cleveland, Ohio 44114  
(216) 502-0600

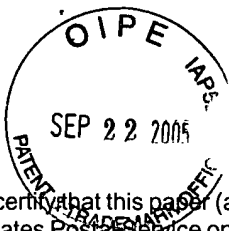
CERTIFICATE OF MAILING

I hereby certify that this paper (along with any paper or item referred to as being attached or enclosed) is being deposited with the United States Postal Service on the date shown below with sufficient postage as first-class mail in an envelope addressed to: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

Date: October 17, 2005

  
\_\_\_\_\_  
Christine Gillroy

**OCT 25 2005**



*ogc*

CERTIFICATE OF MAILING (37 CFR 1.8(a))

I hereby certify that this paper (along with any paper referred to as being attached or enclosed) is being deposited with the United States Postal Service on the date shown below with sufficient postage as first class mail in an envelope addressed to: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

Date: September 16, 2005

Christine Gillroy  
Christine Gillroy

**Docket Number: RWBP101US**

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

In re patent of:

Inventor(s) Graham et al.

Art Unit: 3749

Patent No.: 6,929,465

Examiner: Josiah C. Cocks

Issue Date: August 16, 2005

Serial No.: 10/067,012

Title: **TIMER CIRCUIT FOR VALVE ACTIVATION IN OIL BURNER SYSTEM**

Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 2231301450

**REQUEST FOR CERTIFICATE OF CORRECTION**  
**OF PATENT FOR PTO'S MISTAKE**

Sir:

1. It is noted that an error appears in this patent of a clerical, typographical; and minor nature or character as more fully described below, in Appendix A, and occurred in good faith and correction thereof does not involve such changes in the patent as would constitute new matter or would require reexamination and a certificate of correction is requested.

2. Attached hereto is form PTO-1050 suitable for printing. Also attached is a document which substantiates that the error incurred is attributed solely to the USPTO. This is found on page 5 of a Reply to the Advisory Action mailed to the US Patent and Trademark Office on December 13, 2004.

**OCT 25 2005**

3. The exact page and line number where the error (or lack of error, in the event of a mistake by the Patent Office) occurs in the application file are:

Column 12, Claim 1, line 11

4. **No fee is believed to be necessary.**

However, if the errors are found to be that of the Applicant's, please deduct the fee as required by 37 CFR 1.20(a), and please charge Deposit Account No. 50-1733 the sum of \$100.00.


5. Attached hereto is Appendix A which sets for the reasons **Applicants believe that no fee is due.**

6. Please send the Certificate to

Name: Thomas G. Eschweiler

Address Eschweiler & Associates, LLC  
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Cleveland, Ohio 44114

Date: September 16, 2005

  
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Patent No. 6,292,465  
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**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

Patent No.: 6,929,465

Issued: August 16, 2005

Patentee: John P. Graham  
Victor J. Turk

Title: TIMER CIRCUIT FOR VALVE ACTIVATION IN OIL BURNER SYSTEM

**APPENDIX A**

**The above-captioned Letters Patent contains a typographical error made by the Patent Office. Specifically, the error is as follows:**

Column 12, Claim 1, line 11: Please replace the word "plus" with the word --plug--.

**This error is typographical in nature and was committed by the Patent Office.** Furthermore, correction of this error does not require such changes in the patent as would constitute new matter or would require re-examination. Therefore, a certificate of correction is respectfully requested.

For this reason, it is believed that the revisions required by the Certificate of Correction is **due to an error made by the Patent Office**. As such, the Patentee is entitled to a Certificate of Correction under 37 C.F.R. §1.322, and no fee is believed due.

**OCT 25 2005**

**UNITED STATES PATENT AND TRADEMARK OFFICE  
CERTIFICATE OF CORRECTION**Page 1 of 1

PATENT NO. : 6,929,465  
APPLICATION NO.: 10/067,012  
ISSUE DATE : August 16, 2005  
INVENTOR(S) : John P. Graham, Victor J. Turk

It is certified that an error appears or errors appear in the above-identified patent and that said Letters Patent is hereby corrected as shown below:

Column 12, Claim 1, line 11: Please replace the word "plus" with the word --plug--.

**MAILING ADDRESS OF SENDER (Please do not use customer number below):**

Eschweiler & Associates, LLC  
National City Bank Building  
629 Euclid Avenue, Suite 1210  
Cleveland, Ohio 44114

This collection of information is required by 37 CFR 1.322, 1.323, and 1.324. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 1.0 hour to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Attention Certificate of Corrections Branch, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

*If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.*

**OCT 25 2006**

is operable to receive the control signal from the controller and activate the solenoid valve a predetermined period of time thereafter. Furthermore, the delay time provided by the timer is substantially independent of variations in line voltage and temperature. In accordance with one exemplary aspect of the present invention, the timer circuitry is employed within a cord set that is coupled between the controller and the solenoid valve that may be integrated with the pump. Accordingly, the timer circuit does not take additional space or add further complexity to the oil burner system.

The timer circuit is activated by applying a voltage thereto (that is associated with the line voltage) at 408. For example, if the controller couples the line voltage via the cord set to the circuitry, a diode may act as a half-wave rectifier and deliver the rectified voltage (which is a function of the line voltage) to other circuitry in the timer, such as a charging circuit portion. Such an application causes the charging circuit to charge a node from a first voltage potential to a second voltage potential at a rate that is a function of the line voltage. In accordance with one aspect of the present invention, if the line voltage is above a predetermined level, the charging rate may be modulated to make the charging rate less dependent on the line voltage. For example, a clamping circuit may be coupled in parallel to a portion of the charging circuit and operate to clamp a voltage thereacross if the line voltage exceeds a predetermined amount. In such a manner, the rate of charging is modulated based on the magnitude of the line voltage.

A charged node associated with the charging circuit is then compared to a reference voltage at 410. Once the charged node exceeds the reference voltage (YES at 412), a control signal is generated that serves to activate the solenoid valve. For example, a control signal may be generated to turn on a transistor associated with a bridge circuit to activate the solenoid valve at 414.

In accordance with another aspect of the present invention, the reference voltage is a voltage which is also a function of the line voltage. For example, another charging circuit may be employed having a node which charges at a rate dictated by a time constant which is different from the first charging circuit. In such an example, a comparator circuit can be employed to detect when the voltages of the two charging circuits are equal, and use such detection to define a time delay for the timer circuit. Since both charging circuits are a function of the line voltage, variations in line voltage are experienced by both circuits, thereby decreasing or eliminating altogether the impact of line voltage on the delay time.

Although the invention has been shown and described with respect to a certain aspect or various aspects, it is obvious that equivalent alterations and modifications will occur to others skilled in the art upon the reading and understanding of this specification and the annexed drawings. In particular regard to the various functions performed by the above described components (assemblies, devices, circuits, etc.), the terms (including a reference to a "means") used to describe such components are intended to correspond, unless otherwise indicated, to any component which performs the specified function of the described component (i.e., that is functionally equivalent), even though not structurally equivalent to the disclosed structure which performs the function in the herein illustrated exemplary embodiments of the invention. In addition, while a particular feature of the invention may have been disclosed with respect to only one of several aspects of the invention, such feature may be combined with one or more other

features of the other aspects as may be desired and advantageous for any given or particular application. Furthermore, to the extent that the term "includes" is used in either the detailed description or the claims, such term is intended to be inclusive in a manner similar to the term "comprising."

What is claimed is:

1. An oil burner system comprising an electric cord set comprising a first end coupled to a controller and a second end comprising a plug housing portion coupled to a valve associated with a pump, the electric cord set operable to activate a solenoid valve associated with the pump, the plug housing portion of the electric cord set comprising a voltage or temperature independent timer circuit therein, wherein the timer circuit is operable to activate the solenoid valve a predetermined period of time after a call for ignition signal is generated by the controller, wherein the predetermined time period is substantially constant with respect to variations in line voltage or in an ambient temperature in which the oil burner system resides.

2. The oil burner system of claim 1, wherein the timer circuit further comprises:

a bridge circuit having an input coupled to the solenoid valve, the bridge circuit adapted to receive a sinusoidal line voltage signal at the input and provide a rectified voltage signal at an output thereof;

a switch associated with the bridge circuit, and operable to permit current flow through the bridge circuit upon a closing of the switch, and further operable to prohibit current flow through the bridge circuit upon an opening of the switch; and

a substantially voltage independent trigger circuit operable to receive a control signal associated with the call for ignition signal from the controller and output an activation output signal to close the switch a predetermined time period after the control signal, wherein the predetermined time period is substantially independent of variations in the line voltage supplied to the oil burner system.

3. An oil burner system having an electric cord set coupled between a controller and a valve associated with a pump, the electric cord set operable to activate a solenoid valve associated with the pump, the electric cord set comprising a voltage or temperature independent timer circuit operable to activate the solenoid valve a predetermined period of time after a call for ignition signal is generated by the controller, wherein the predetermined time period is substantially constant with respect to variations in line voltage or in an ambient temperature in which the oil burner system resides, wherein the timer circuit further comprises:

a bridge circuit having an input coupled to the solenoid valve, the bridge circuit adapted to receive a sinusoidal line voltage signal at the input and provide a rectified voltage signal at an output thereof;

a switch associated with the bridge circuit, and operable to permit current flow through the bridge circuit upon a closing of the switch, and further operable to prohibit current flow through the bridge circuit upon an opening of the switch; and

a substantially voltage independent trigger circuit operable to receive a control signal associated with the call for ignition signal from the controller and output an activation output signal to close the switch a predetermined time period after the control signal, wherein the predetermined time period is substantially independent of variations in the line voltage supplied to the oil burner system, wherein the voltage independent trigger circuit further comprises:

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**IN THE CLAIMS:**

*Please amend claims 1 and 23 as provided below.*

1. (Currently amended) An oil burner system ~~having~~ comprising an electric cord set comprising a first end coupled ~~between~~ to a controller and a second end comprising a plug housing portion coupled to a valve associated with a pump, the electric cord set operable to activate a solenoid valve associated with the pump, the plug housing portion of the electric cord set comprising a voltage or temperature independent timer circuit therein, wherein the timer circuit is operable to activate the solenoid valve a predetermined period of time after a call for ignition signal is generated by the controller, wherein the predetermined time period is substantially constant with respect to variations in line voltage or in an ambient temperature in which the oil burner system resides.

2. (Original) The oil burner system of claim 1, wherein the timer circuit further comprises:

a bridge circuit having an input coupled to the solenoid valve, the bridge circuit adapted to receive a sinusoidal line voltage signal at the input and provide a rectified voltage signal at an output thereof;

a switch associated with the bridge circuit, and operable to permit current flow through the bridge circuit upon a closing of the switch, and further operable to prohibit current flow through the bridge circuit upon an opening of the switch; and

a substantially voltage independent trigger circuit operable to receive a control signal associated with the call for ignition signal from the controller and output an activation output signal to close the switch a predetermined time period after the control signal, wherein the predetermined time period is substantially independent of variations in the line voltage supplied to the oil burner system.